DOCUMENT RESUME

ED 406 017 PS 025 238

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TITLE Parental Report, Home Observations, and Laboratory Assessment as Windows into Infant Temperament.
PUB DATE Apr 97
NOTE 11p.; Paper presented at the Biennial Meeting of the Society for Research in Child Development (62nd, Washington, DC, April 3-6, 1997).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Behavior Rating Scales; Factor Analysis; *Infants; Measures (Individuals); Mothers; Observation; Parent Child Relationship; *Personality; *Personality Assessment; *Personality Measures
IDENTIFIERS Temperament Assessment Battery

ABSTRACT

The purpose of this study was to examine the convergence among observational data on children's temperament. Data were gathered through: (1) standard procedures designed to elicit discrete emotions; (2) parental reports; and (3) children's emotional tone observed during naturalistic mother-child contexts. A total of 112 normally developing 8- to 10-month-olds were observed during standard laboratory episodes (the Laboratory Temperament Assessment Battery) designed to elicit joy, fear, anger, and discomfort. Mothers' and fathers' reports regarding different aspects of infants' temperament, and observations of the infants during naturalistic interactions with their mothers, were also collected. The families were predominantly white and varied in socioeconomic status. Findings suggested that infants' reactions cohered highly within each standard episode, as well as across all episodes targeting the same emotion. Emotionality expressed in these standardized procedures corresponded meaningfully and significantly with the infants' emotional tone in the mother-child contexts observed at home. Parental reports converged moderately with the home observations, but only for fathers. The parental reports and the infants' emotions in standard procedures were unrelated. (KDFB)

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Parental Report, Home Observations, and Laboratory Assessment as Windows into Infant Temperament

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Presented at the Biennial Meeting of the Society for Research in Child Development, April 1997, Washington, DC. This work was supported by the grants from NSF (DBS-9209559 and SBR-9510863) and NIMH (K02 MH01446-01) to Grazyna Kochanska, Department of Psychology, University of Iowa, Iowa City, IA 52242-1407

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ABSTRACT

To obtain 3 comprehensive measures of early temperament, we observed 112 normally developing 8-10-month-old infants during standard episodes designed to elicit joy, fear, anger, and discomfort, collected parental reports (both mothers' and fathers') regarding different aspects of infants' temperament, and we observed the infants during naturalistic interactions with their mothers. Infants' reactions cohered highly within each standard episode, as well as across all episodes targeting the same emotion. In addition, emotionality expressed in these standardized procedures corresponded meaningfully and significantly with the infant's emotional tone in the mother-child contexts observed at home. Parental reports converged moderately with the home observations, but only for fathers. The reports and infants' emotions in standard procedures were unrelated.

INTRODUCTION

The study of early temperament usually relies on one of three types of assessment: standard assessment batteries, parental reports, or home observations. The advantages and shortcomings of each remain controversial, some have argued that each approach affords a somewhat different window into early temperament. We obtained comprehensive measures of early temperament using all three assessment approaches in a large study of children and their mothers observed when the infants were between 8 and 10 months of age.

OBJECTIVE

Our main objective was to examine the convergence among observational data on children's temperament measured as their response to standard procedures designed to elicit discrete emotions, parental reports, and children's emotional tone observed during the naturalistic mother-child contexts. To increase the robustness of all our constructs, we consistently aggregated across coded intervals, standard episodes targeting a given emotion, parental report scales, and contexts of mother-child interaction using either rational or a factor-analytic approach.

METHOD

Participants

Mothers of normally developing babies volunteered for a longitudinal study (N = 112, 56 girls, 56 boys). Children ranged in age from 8 to 10 months (M = 8.94, SD = .63). The families were predominantly White (mothers, 97%, fathers 92 %), their socioeconomic status varied both in terms of education (high school only to advanced degrees) and family income (under $20,000 to more than $60,000 per year). All families came from several counties across eastern Iowa.

Procedures

Observation of Children's Emotionality in Standard Procedures

We focused on four early emotions (joy, fearful distress, angry distress, and discomfort). Episodes to assess the first three emotions were drawn from the Laboratory Temperament Assessment Battery (Lab-Tab, Version 2.03, Goldsmith & Rothbart, 1994). To elicit discomfort, we designed our own episodes. During a home session, each episode was conducted in a standardized manner in compliance with Lab-Tab's guidelines; all necessary props were brought from the laboratory. Each episode began when the infant was in a neutral mood and ended if maximum distress was reached or when requested by the mother. All episodes were interspersed with relaxed mother-child contexts of naturalistic daily routines.

Joy

Puppets. The young woman experimenter enacted a brief animated dialogue using two colorful hand puppets that tickled the baby. After the dialogue the puppets were put in front of the baby for 30 s.

Where is Mommy? The mother sat behind a light wooden frame in front of her child and exclaimed "Peek-a-Boo" when the experimenter opened a window in the frame. During the third trial the mother, behind another door, was not visible to her infant until she was revealed during the final trial (four trials).

Pop-Up Bunny. The experimenter demonstrated a colorful plastic box that allowed a bunny to pop up by manipulating a roller on the front of the box. The baby was then allowed 2 min to play with the toy alone.

Coding

For all joy episodes we coded the latency to first smile, presence or absence of discrete joy behaviors (smiling, laughing, positive vocals, and positive motor acts) and average and peak intensity of smiling (0-3).

Fearful Distress

Stranger Approach. Immediately upon arriving at the home, the camera person acting as the stranger approached the baby sitting on the floor in the kitchen. The stranger first addressed the baby, approached up to 2' away, stopped, addressed him/her again then picked the baby holding him/her in her arms for 10 s.

Mechanical Dog. On a table near the baby, the experimenter positioned a 36" long plastic track and then moved an odd-looking remote-controlled dog down the track rapidly toward the baby. After the dog stopped in front of the baby for 10 s, it retreated back up the ramp (three trials).

Masks. The experimenter, sitting directly in front of the baby, put on each of four consecutive masks for 10 s each. Saying the baby's name in a neutral tone, she moved her masked face slowly and from side to side toward the child. The masks were presented in order from least to most scary (four trials, ghost, clown, gorilla, gas mask).

Parasol. The experimenter opened an automatic, large, black-and-white umbrella after pointing it toward the child, and then slowly closed it for 5 s (three trials).

Coding

For all fearful distress episodes we coded the latency to first fear response, presence or absence of discrete fear behaviors (twisting away, sinking, not looking, and resisting), and average and peak intensity of facial, vocal, bodily fear, and escape behavior (0-3 for face and body; 0-5 for vocal). Average intensity and peak for startle were also coded for the Parasol.

Angry Distress

Gentle Arm Restraint. Once the baby was engaged in play with an attractive toy, the mother, positioned directly behind her child, held the baby's forearms to his/her sides for 30 s (two trials).

Car Seat. The mother placed her baby in a standard infant car seat and buckled the strap confining the child for 60 s.

Toy Retraction. Once the baby was engaged in play with an attractive rattle, the mother took the toy and held it just out of the child's reach for 15 s (three trials).

Coding

For all angry distress episodes we coded the latency to first anger response, average and peak intensity of facial, vocal, and bodily (struggle) anger (0-3 for face, 0-5 for vocal; 0-4 for struggle). The presence or absence of discrete anger behaviors (pulling, kicking, banging the table, pushing) was coded for Arm Restraint and Toy Retraction.

Discomfort

Blender. When the child was seated in his/her high chair in the kitchen, the experimenter turned on a blender for 30 s of loud aversive noise.

Lemon. The mother fed her baby unsweetened diluted lemon juice (two trials).

Spray Bottle. The experimenter gently misted the baby's face with water. After 30 s the mother wiped his/her face with a tissue.

Ice. When the baby was undressed, the experimenter touched his/her stomach and back with a plastic ice cube just taken from the freezer (two trials).

Coding

For all discomfort episodes we coded latency to first distress response, presence or absence of discrete discomfort behaviors (twisting away, sinking, not looking, and resisting), average and peak intensity of facial, vocal, bodily distress, startle, and escape (0-3, except 0-5 for vocal intensity).

Reliability of coding standard procedures. The latencies were coded within 1 second for 82% - 97 % of judgments. Kappas ranged from .59 to 1.00 for the discrete behaviors; for the intensity codes, kappas ranged from .60 to .98.

Data aggregation. The coded variables (latencies, discrete behaviors, mean and peak intensities of emotion) cohered highly within each episode (joy, alphas = .87 - 92, fearful distress, alphas = .77 - .81, angry distress, alphas = .74 - .87, discomfort, alphas = .59 - .77). We then created aggregated scores for each episode, and then, across episodes

targeting the same emotion (for joy, r's ranged from .17, $p < .10$ to .35, $p < .001$, for fearful distress, r's ranged from .20, $p < .05$ to .47, $p < .001$, for anger, r's ranged from .05 to .18, $p < .10$, for discomfort, r's ranged from .01 to .33, $p < .001$).

Parental Reports of Children's Temperament

Both mothers and fathers completed the Infant Behavior Questionnaire, a well-known instrument that reflects Rothbart's model of temperament (IBQ, Rothbart, 1981). It consists of six scales (Activity, Distress to Limitations, Distress to Novelty, Duration of Orienting, Smiling and Laughter, and Soothability). Mothers' and fathers' reports converged considerably. Except for Soothability, the r's ranged from .36 to .46 (all p's < .001). Principal Components Analyses produced two components, very similar for both mothers and fathers: Affectively Positive and Affectively Negative.

Observation of Children's Emotional Tone during Mother-Child Interactions

Each mother-child dyad was videotaped for approximately 1 hour at home during naturalistic interactions (e.g., snack, play, mother busy in the kitchen, care giving, or bath). The child's affect expression was coded for every 30-sec segment using several discrete emotion codes (joyful, sad, fearful, angry, fussy, and distressed). More than one affect could be coded, but each could be coded no more than once in a segment. If no clear discrete affect code was present in a segment, one of two mood codes was assigned, neutral positive or neutral negative. All codes were subsequently tallied and aggregated across all observed contexts into overall scores, one for positive affect and one for negative affect. Reliability of coding, kappas ranged from .75 to .80.

RESULTS

Relations Between Standard Procedures and Children's Emotional Tone

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Insert Table 1 about here

The composite scores for the standard procedures related meaningfully to the infants' emotional tone observed in the home. Children who had high scores in the Lab-Tab joy episodes expressed more positive emotional tone and less negative emotional tone in the mother-child contexts; those who had high scores in the Lab-Tab anger episodes expressed significantly less positive emotional tone, and more negative emotional tone in the home observations. Children who had high discomfort scores in the standard procedures expressed more negative emotional tone.

Parental reports, however, did not converge with the standardized procedures, although they had modest, meaningful links with the home observations. Children seen by their fathers as high on the Affectively Negative IBQ component were lower in their positive emotional tone, $r = -.30$, $p < .001$, and higher in their negative tone, $r = .27$, $p < .005$.

DISCUSSION

As urged by temperamental theorists, we used all three basic methodologies simultaneously to capture infants' temperament: standard procedures designed to elicit discrete emotions, parental reports, and observations in naturalistic mother-child interactions. There was robust convergence between the standard procedures and children's emotional tone in naturalistic interactions and moderate convergence between parental reports (father's only) and infants' emotional tone in naturalistic contexts. Parental reports and infants' responses to standard procedures, however, were unrelated.

References

Goldsmith, H. H., & Rothbart, M. K. (1994, November). The Laboratory Temperament Assessment Battery (Version 2.03). Unpublished manuscript.

Rothbart, M. K. (1981). Measurement of temperament in infancy. Child Development, 52, 569-578.

Table 1

Infants' Emotionality Observed in Standard Procedures as Predictors of Their Emotional Tone in Mother-Child Interactions

Step	Predictor(s)	Dependent Variable: Positive Emotional Tone F	Beta	Dependent Variable: Negative Emotional Tone F	Beta
1	Sex	<1	.01	<1	.05
		R^2 = .00	F_{ch} <1	R^2 = .00	F_{ch} <1
2	Emotionality Composites in Standard Procedures:				
	Joy	14.56*****	.35	5.40**	-.21
	Fearful Distress	<1	.08	1.69	-.12
	Angry Distress	4.21*	-.19	10.93****	.30
	Discomfort	1.35	-.11	4.22*	.19
		R^2 = .15	F_{ch} = 4.52****	R^2 = .15	F_{ch} = 4.58****
		Overall F(5,106) = 3.62****		Overall F(5,106) = 3.72****	

* p < .05. ** p < .025. *** p < .01. **** p < .005. ***** p < .001.